Army Against Navy in the Final Stage of the Great Fleet Manoeuvres

Fire from All the Land Forts Protecting the Harbor Is Now Controlled by Elaborate System of Submarine Cables.

Millions of Pounds of Smokeless Powder Stored in the Various Fortresses Guarding Our 5,558 Miles of Coast.

(CONTINUED FROM FIRST PAGE.)

The fleet that will move to the attack will be the most powerful ever assembled since the great gathering at Culebra last winter. The fleet will be divided into two squadrons, each of two divisions. The composition will be as follows:—

First Squadron.—First division—Battle ship Kearsarge, flagship of Rear Admiral Barker, and battle ships Alabama and Illinois. Second division—Battle ship Texas, flagship of Rear Admiral Sands, and battle ships Indiana and Massachusetts.

Second Squadron.—First division—Cruiser Olympia, flagship of Rear Admiral Coghlan, and cruisers Baltimore and Topeka. Second division—Cruiser Yankee, flagship of Rear Admiral Wise, and cruisers Prairie and Panther.

Accompanying the fleet will go ten destroyers—the Decatur, the Barry, the Chauncey, the Dale, the Bainbridge, the Truxton, the Worden, the Whipple, the Lawrence and the Stewart.

Controlling Fire of Coast Guns.

During last year's manoeuvres it was found that the army was lacking in adequate method for controlling fire from its modern seacoast guns. That "make believe" game of war was the subject of much raillery at the time, but the men charged with the defence of the nation paid small heed to the ridicule and concerned themselves with the lessons which the manoeuvres taught.

This deficiency in fire control was one, and army men set about rectifying it. Various plans have been suggested, and these will be tried out under the supervision of a board of army officers who will assemble at Portland for that special purpose.

As now arranged the fire from all four of the forts will be controlled by an elaborate system of submarine cables. The main station is to be located at a strategical station on the easterly point of Cape Elizabeth. Officers stationed there will be able to direct the fire of all the forts, even that of Fort McKinley, nine miles distant. Needless to say, this station is well protected, practically invisible from the sea, and will be strongly guarded.

Last year's manoeuvres further showed that the army had much to learn about searchlights, now regarded as an important adjunct of coast defence. Some experiments were made in the use of blinding lights, but the experience then obtained convinced many army officers that the advantage of using this light had been greatly exaggerated, and that the occasions when the blinding light can be effectively used are very few. In the coming manoeuvres elaborate tests will be made of searchlights and of lights for illuminating mine fields and flank positions.

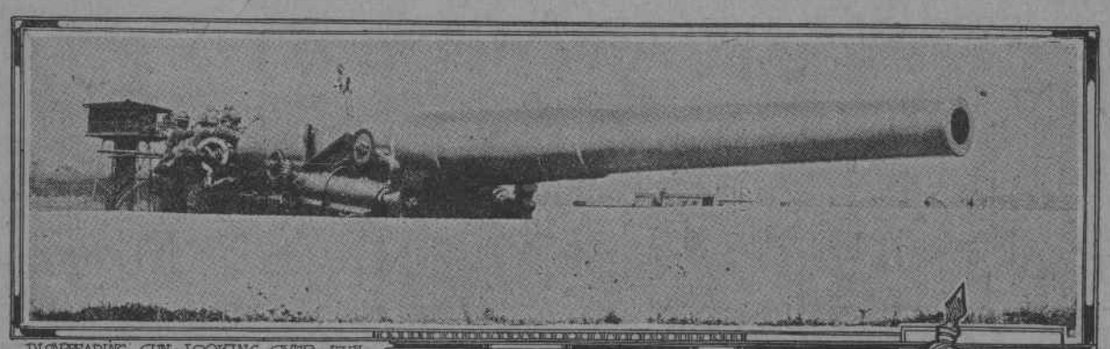
Work for Land Forces.

The third point in the problem has to do with the use of infantry and light artillery in defending forts from attack in the rear. From a spectacular view point this promises to be one of the most interesting events of the series—naval battalions beating their way through the surf and swarming up the shore, their landing being disputed by army defenders.

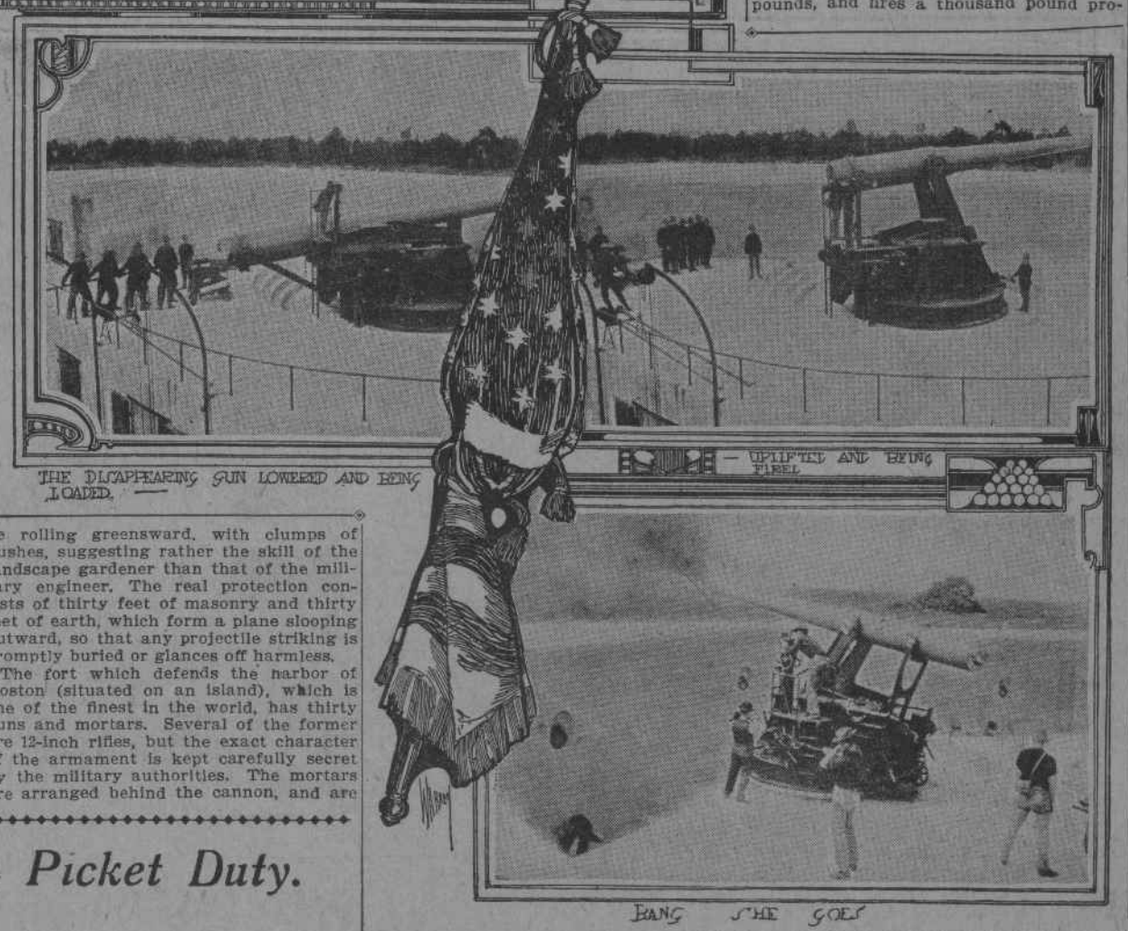
It is through one of the lower entrances to the harbor, of which there are three, that the army anticipates its assumed enemy will attempt to send a landing force. The first of these entrances, easterly from the main ship channel, is Hussey's Sound, which lies between Peaks and Long islands. Beyond Long and Cliff islands is Luke's Sound, and several miles beyond that, between Jewell's Island and Harpswell Neck, is Broad Sound.

Any of these is deep enough to admit the passage of a sizable ship, but their channels are circuitous and they are seldom used except by yachtsmen and fishing craft. It was through one of these smaller entrances that during the civil war a party of Confederates sailed into the harbor in a fishing vessel one foggy night and cut out the federal revenue cutter Caleb Cushing.

ON THE KEARSARGE- FULL CREW OF MEN TAKEN JUST BEFORE SAILING FROM COPYRIGHT 903 BY E. MULNER



DISAPPEARING GUN LOOKING OVER THE PARAPET.



THE DISAPPEARING GUN LOWERED AND BEING LOADED. — UPLIFTED AND BEING FIRED.

BANG SHE GOES

able to throw explosive shells for a distance of three miles with sufficient accuracy to hit a ship. These projectiles are not intended to penetrate, but merely to drop upon the deck of a vessel and burst. They carry a big charge of maximite, which is three times as powerful as gunpowder, and one of them, if successfully landed, would be liable to put a battle ship out of action.

There are to be, in all, 568 mortars of twelve-inch calibre distributed among the various coast fortifications, and three-fourths of them are now in position. They are a great improvement on the old-fashioned mortars of cast iron with steel hoops, and the latter are being relegated to the less important harbors. A mortar of the new type is thirteen feet long, weighs nearly 30,000 pounds and requires a powder charge of 125 pounds to send its explosive conical projectile on its deadly mission. Weapons of this character have not yet undergone a practical test in war, but it is thought that they will do effective work.

Fifty-Seven Ton Monster.

A 12-inch rifle of the pattern used in our seacoast fortresses is forty feet long, weighs fifty-seven tons, requires a powder charge of five hundred and twenty pounds, and fires a thousand pound projectile a distance of nine miles, with a velocity (on leaving the muzzle) of two thousand one hundred feet per second. It could shoot the same projectile fourteen or fifteen miles if its muzzle were sufficiently elevated; but there would be no object in such a performance, inasmuch as there is no use aiming at an enemy who is beyond the limit of vision, and a ship is out of sight only seven miles away, owing to the curvature of the earth.

These guns—and the same may be said of the 10-inch and 8-inch rifles—shoot three kinds of projectiles. One is the so-called armor piercing shot, which is nearly solid, having only a small cavity to contain a high explosive. The second is the armor piercing shell, which has a larger cavity, so as to contain more of the explosive. The third is the torpedo shell, which is in effect a torpedo, having thin walls and containing a large bursting charge of maximite. This explosive, by the way, is a government secret so far as its composition is concerned.

Most of the great rifles are mounted on disappearing carriages, so that they are safe from injury by shot, except at the moment of firing. When its fire has been delivered the cannon is lowered promptly below the parapet, and, after being reloaded, is uplifted again to the firing position. This is accomplished rapidly and easily, and the mechanism is so perfect that it suffers not at all from the tremendous shock of the discharge of a quarter of a ton of gunpowder.

Plenty of Smokeless Powder.

At the beginning of the war with Spain the government, owing to the parsimony of Congress, had no smokeless powder. We have now some millions of pounds of that kind of explosive on hand and safely stored in the various seacoast fortresses. Apropos of which it is worth mentioning that when we took possession of the fortifications at Havana many of the front sights of the Spanish guns were missing.

Others were made, but in putting them in place it was found that the lines of sight were so "out" as to make a deviation of fire at 5,000 yards enough to miss a ship. This was the case with nearly all the cannon. They were made at Spanish arsenals, and it is reasonable to suppose that the same defect existed in the guns mounted on the Spanish war vessels—a theory which would account for the slight damage inflicted upon our own ships by the guns of Spain.

The new system of seacoast defences comprises fortifications at Portland, Me.; Portsmouth, N. H.; Boston, Narragansett Bay, the east entrance to Long Island Sound, the east and south entrances to New York Harbor, Philadelphia, Baltimore, Washington, Hampton Roads, Wilmington, Charleston, Savannah, Key West, Pensacola, Mobile, New Orleans, Galveston, San Diego, San Francisco, the mouth of the Columbia River and Puget Sound.

"One thing for which the War Department is very anxious," said General Crozier, "is the proper fortification of our newly acquired islands. We have had these islands for five years now, and nothing has been done toward providing them with modern defensive work. Manila Harbor could be, and ought to be, made impregnable, and other important harbors in the Philippines, the Hawaiian Islands and Puerto Rico are equally in need of forts and guns. Thus far, however, Congress has refused to give any money for the purpose, and there is no telling how long it will be before adequate measures are taken for placing these valuable strategic points in a suitable condition for defence."

Types of Guns That Defend Portland from Hostile Fleet

Monster Disappearing Rifles Are Protected by Thirty Feet of Masonry and Thirty Feet of Turf Covered Earth.

THE great system of modern fortifications for the protection of our 5,558 miles of seaboard, work upon which was begun sixteen years ago, is now approaching completion, and three-fourths of the guns have already been placed in position. Only about $15,000,000 worth of huge rifles and mortars, in addition to those already provided, will be needed to finish the armament of these mighty defensive structures, which constitute the most superb and costly series of fortresses existing in the world.

"What we chiefly need at present is about half a million dollars to spend on target practice," said General Crozier, chief of the Ordnance Bureau, yesterday. "Now, that we have the guns, our men must learn to hit the mark. But accuracy of marksmanship is not the only point involved. Incidentally to the shooting, the gunners will have a much needed opportunity to learn how to handle the weapons. A modern high power coast defence gun is a huge and elaborate machine, the effective management of which requires much skill, such as is only to be gained by experience."

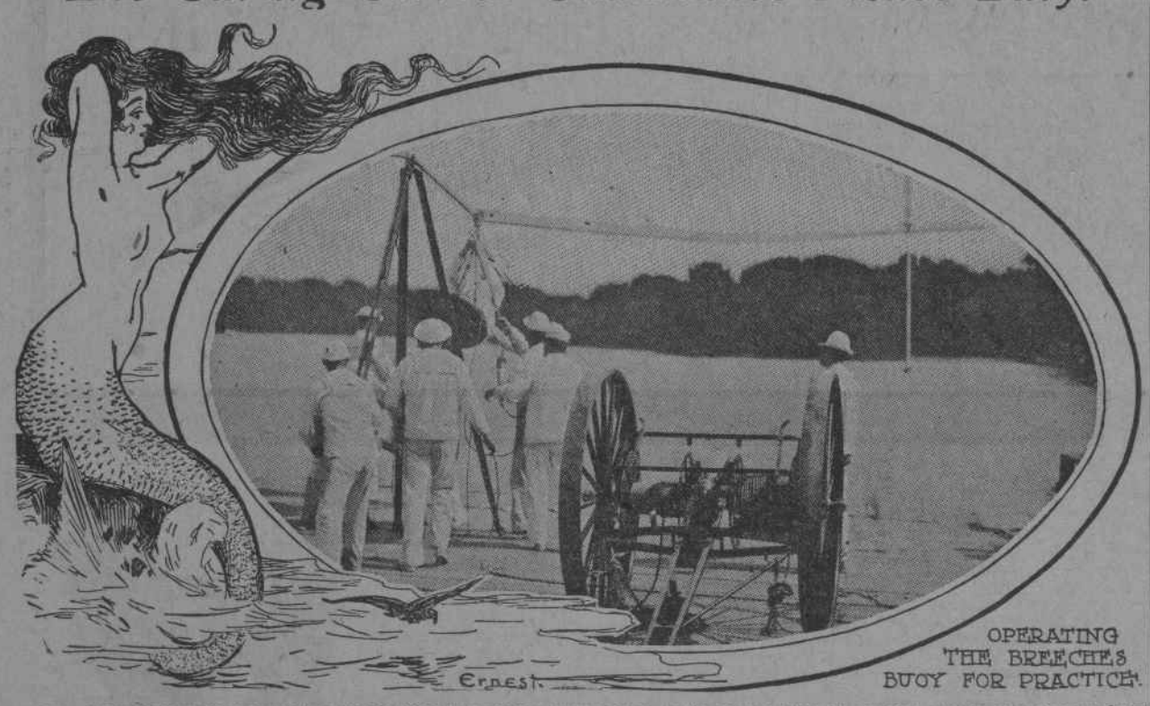
It costs a big sum of money to build and arm an up-to-date fort in these days. A single 12-inch rifle comes to $45,000, its carriage to $41,000 in addition, and the emplacement of concrete in which it stands to $60,000. There you have $146,000 right off; and perhaps eight or more such emplacements, each containing its huge gun, may be required. The total expense will easily eat up a couple of millions of dollars, though a good deal depends upon the question whether the works have to be blasted out of solid rock or dug out of sand.

Deadly War Holes."

A modern fortress, you see, is not a walled enclosure, as of old, but a hole in the ground—or rather, a series of holes called emplacements, built of concrete, and each of them containing one or more guns. No lofty and menacing structure strikes the eye of the observer who approaches the works; but, instead, there is likely to be rolling greensward, with clumps of bushes, suggesting rather the skill of the landscape gardener than that of the military engineer. The real protection consists of thirty feet of masonry and thirty feet of earth, which form a plane slooping outward, so that any projectile striking is promptly buried or glances off harmless.

The fort which defends the harbor of Boston (situated on an island), which is one of the finest in the world, has thirty guns and mortars. Several of the former are 12-inch rifles, but the exact character of the armament is kept carefully secret by the military authorities. The mortars are arranged behind the cannon, and are

Life Saving Service Undertakes Picket Duty.



OPERATING THE BREECHES BUOY FOR PRACTICE.

ORDERS have been issued to all of the stations of the Life Saving Service from Cape Cod to Eastport, Me., to undertake picket duty, beginning August 1, in connection with the great naval manoeuvres which are to be conducted during the coming month off the New England coast.

Under an arrangement made between the Navy and Treasury departments the Life Saving Service will act as auxiliary to our sea forces, the crews of the stations serving as a part of the naval patrol. Their business will be to watch for the "enemy," and when a suspicious ship is sighted notification will be sent at once to the nearest coast guard post. All of the stations are connected by telephone, and a message can be quickly communicated in this way from station to station until a telegraph office is reached, whence it may be forwarded instantly to the headquarters of the commander-in-chief, or to Washington.

For this temporary purpose the life savers will be under the orders of Admiral John J. Bartlett, and the object in view will be to train them to act in time of war as part of the naval patrol along the coast. In case of hostilities it would be necessary to keep every mile of our enormously long coast line under watch, and inasmuch as this is done by the surfmen in time of peace for the preservation of life and property, they might just as well serve as guards incidentally when the country is threatened by a hostile Power. Indeed, they did admirable work in this line during the conflict with Spain, and the first news of the arrival of the Oregon came through a life saving station, which received the intelligence by signal.

Last year was the most remarkable in the history of the life saving service so far as disasters were concerned, the amount of property imperilled and the number of persons shipwrecked being much greater than in any previous twelvemonth. Three hundred and eighty-five vessels were wrecked upon our shores (fifty-four of them of over one thousand tons), with 3,424 souls on board. Of these people all were rescued except nineteen, the value of the ships lost being $12,125,000, and of cargoes $2,268,000. The total cost of the service which has so vast a usefulness is only a little over $1,500,000 per annum.

From Cape Cod southward to Cape Fear extends a continuous string of life saving stations, which along the more dangerous parts of the coast are not more than half a dozen miles distant from one another. Barring Cape Hatteras, Cape Cod is reckoned the most perilous portion of our shore line, being beset in winter by frightful squalls and blinding snow squalls. Along the south shore of Long Island, at some distance from the mainland, runs a narrow sand strip, which is likewise a graveyard of ships. It is fringed with life saving stations, whose crews are apt to be cut off from the mainland for months at a time in the cold season.

The same sand strip system, with a few breaks, extends thence southward as far as Florida. It forms the so called Eastern Shore of Maryland and Virginia, and off the coast of North Carolina it is a mere sank bank a mile or so in width and 250 miles long, separated from the mainland by the vast sounds of Albemarle and Pamlico, sheets of water twenty-five miles wide in parts. A salient V shaped angle of the bank off the North Carolina shore, pointing out to sea, forms what is known as Cape Hatteras, the very abode of storms, where good weather can never be counted upon for an hour ahead.

Line of Battle.

All of this long strip, from Cape Fear northward to Long Island, is one line of battle for the life savers, whose duties are most arduous, as well as perilous. Every night, no matter how fiercely the storm rages, every mile of the shore line must be patrolled. In the daytime regular watches are kept and the sea is constantly scanned from the top of the station with a telescope, to make sure that no vessel is in need of help. Perchance a ship will be disabled for want of information as to its exact whereabouts, in which latter case code signals will be interchanged by wigwag.

The surfman on his nightly patrol carries in his hand a lantern, which never goes out, no matter how much it storms, and in his belt is thrust a torch of a peculiar pattern known as a "Coston light." With the lantern he can wave signals, and if he sees a vessel in distress he ignites the torch, which burns with a flare like red fire. By means of the torch he can give immediate notification of the trouble to all stations up and down the coast for a long distance, and the receipt of such intelligence instantly arouses the crews to action.

The first thing done is to run out the surfboat, an affair of a moment, inasmuch as it is already mounted upon a sort of wagon. Horses are hitched to the wagon and the boat and the crew are hauled as quickly as possible to the point on the beach directly opposite the wreck. It is provided with air tanks to keep it afloat. If the sea is not running too frightfully high it is promptly launched and rowed by six men (the seventh steering) out to the vessel. In this way most of the rescues of shipwrecked persons on our coast are accomplished.

If there is so tremendous a sea that the boat would probably be swamped recourse is had to the breeches buoy, which is the simplest and most effective contrivance ever devised for life saving. It is a circular life preserver, to which a pair of canvas pants are attached, and all that one need do is to put one's legs through the latter and hold on while being transported from the ship to the shore. It is necessary first, of course, to get a line to the ship, and this is accomplished by firing a projectile from a small howitzer over the vessel. The shot carries a rope, which the people on board use to pull aboard a hawser, and the latter being fastened to a mast the breeches buoy is rigged so as to travel upon it. Communication having been established by means of the hawser, it is easy enough for one of the life savers to go out to the ship in the breeches buoy and superintend the transfer of the people.

A life saving station has a crew of six men (seven in winter) and a keeper. The keeper gets $900 a year and the men $60 a month each. On the ground floor is a kitchen, the dining room and the room in which the boats and other apparatus are kept; up stairs are the keeper's room, the storeroom and a large room for the surfmen, containing seven iron beds. Everything is as neat as a new pin. The life savers spend their leisure time reading and playing games. The Seamen's Friend Society supplies travelling libraries, which are passed along from station to station, but when there is no more serious duty on hand many hours are taken up by drills in the surf, practice firing with the surf gun, already described, and resuscitation drill, in which each man in turn plays that he is half drowned and is emptied of water and otherwise revived by his comrades.

There are nearly two hundred life saving stations on the Atlantic and Gulf coasts of the United States, but only a few of them are located north of Cape Cod, because in New Hampshire and Maine, though the shores are so rocky, shipwrecks are rare, harbors offering refuge. From Cape Fear to the end of the Florida Peninsula there are no stations, the places of such establishments being taken by so-called "houses of refuge," located at distances of fifteen miles or so, each of them in charge of a keeper. After every storm the keeper goes along the shore and looks to see if anybody has been cast away. If any such unfortunate is found he or she is taken to the house, fed and revived, and nursed, if necessary.

We have the finest life saving service in the world. The first money given for it by Congress was $10,000, appropriated in 1848, to pay for eight stations on the Jersey coast. The present organization was put into shape by Sumner I. Kimball, who is now its superintendent. No pensions are given, but a disabled surfman gets one year's pay, and if he loses his life two years' wages go to his widow or children.

Lost for a Century.

A BOTTLE, which was hermetically sealed, was recently found floating on the water near the island of Carpathos. When it was opened the following remarkable letter was discovered in it:—

"29, 11, 1702.

"Latitude 49, Eastern longitude 52¼.

"His Majesty's vessel Clown.

"May God help us. We are on a raft in the middle of the ocean and have neither water nor food. We have already eaten one man and after a bitter quarrel we have now decided to draw lots in order to decide which of us is to be eaten next. We are all like lunatics. Our vessel was wrecked on November 1, 1702, and she went to the bottom so quickly that we had only time to put a very small quantity of water and food on the raft. The captain's wife cooked her little dog and after eating it became insane and committed suicide.

"Whoever finds this letter, telling of our misfortunes, is requested to take it at once to the Admiralty. MANNER."

Ship Mascots.

AT the review before the King of Italy recently the pet donkey of the ship Bacchante marched in front of the men. A donkey is rather a bulky sort of a pet, but probably no more troublesome than the pet deer of the English war ship Terrible. The privilege of keeping pets is very much appreciated by the bluejackets of all navies, who lavish their spare time and some of their spare cash on strange animals. The Centurion once had a tame monkey that used to eat with a spoon from a plate and drink from a glass, with a dinner napkin tucked under his chin the while. The Caesar had a pet goose for some time back. Cats and dogs are, of course, common on shipboard.